

## REMARKS

This Amendment responds to the Office Action dated January 13, 2005 in which the Examiner rejected claims 6-8, 10-13 and 15-16 under 35 U.S.C. §102(e), rejected claims 9, 14, 17 and 20-29 under 35 U.S.C. §103 and objected to claim 18-19 as being dependent upon a rejected base claim but would be allowance if rewritten in independent form.

As indicated above, claims 6 and 11 have been amended to make explicit what is implicit in the claim. The amendment is unrelated to a statutory requirement for patentability.

Claim 6 claims an image pick-up device comprising a sensor, a setting unit, and a correction unit. The sensor picks up an image through a lens. The setting unit sets chromatic aberration factors based on the image data picked up from a predetermined pattern. The predetermined pattern corresponds to pixel pitch of the sensor. The correction unit corrects image data picked up from an original image by using the chromatic aberration factors set by the setting unit.

Through the structure of the claimed invention having a setting unit which sets chromatic aberrations factors based on image data from a predetermined pattern corresponding to pixel pitch of a sensor, as claimed in claim 6, the claimed invention provides an image pick-up device which can output stable color image information signals which are not influenced by chromatic aberration. The prior art does not show, teach or suggest the invention as claimed in claim 6.

Claim 11 claims an image pick-up device comprising a sensor, a pattern image, a calculation unit, a memory and a correction unit. The sensor picks up an image through a lens. The pattern image has a predetermined pattern

corresponding to a pixel pitch of the sensor. The calculation unit calculates chromatic aberration factors based on the image data picked up from the pattern image. The memory stores the calculated chromatic aberration factors. The correction unit corrects image data picked up from an original image based on the stored chromatic aberration factors.

Through the structure of the claimed invention having a pattern image with a predetermined pattern corresponding to a pixel pitch of the sensor, as claimed in claim 11, the claimed invention provides an image pick-up device which can output stable color image information while not being influenced by chromatic aberrations. The prior art does not show, teach or suggest the invention as claimed in claim 11.

Claim 17 claims an image pick-up device comprising a sensor, a pattern image, a determining unit, a setting unit and a correction unit. The sensor picks up an image through a lens. The pattern image has a predetermined pattern corresponding to a pick-up resolution. The determining unit determines a character amount of the image data picked up from the pattern image. The setting unit sets chromatic aberration factors based on the character amount. The correction unit corrects image data picked up from an original image by using the chromatic aberration factors set by the setting unit.

Through the structure of the claimed invention having a determining unit which determines a character amount of the image data picked up from the pattern image, as claimed in claim 17, the claimed invention provides an image pick-up device which can output a stable color image information signal which is not influenced by chromatic aberration. The prior art does not show, teach or suggest the invention as claimed in claim 17.

Claims 6-8, 10-13 and 15-16 were rejected under 35 U.S.C. § 102(e) as being anticipated by *Komiya et al* (U.S. Patent No. 6,097,430).

*Komiya et al* appears to disclose an image processing apparatus for obtaining a broader-range photograph by photographing a subject image in a plurality of divided parts and joining or composing together part-images. (col. 1, lines 6-9) The apparatus comprises three image input sections 1a to 1c, image correction sections 14a, 14b and 14c for subjecting those images which are obtained from the image input sections 1a, 14b and 14c to correction for their geometric displacement, such as a parallax and an aberration of a photographing lens, an image composing section 3 for composing together corrected images, a monitor 4 and a printer 5. The image input section 1a to 1c, each, comprises a photographing lens 59, a semiconductor image pickup element 60 such as at least one CCD, and an A/D converter 2 for converting an obtained image signal to a digital signal. Upon composing together a plurality of images, the apparatus subjects those composing images to a correction for their geometric displacement, such as a parallax and aberration of a photographic lens, on the basis of photographic conditions and is characterized by having, as shown in FIG. 1, image correction sections 14 for correcting for the aberration and parallax. (col. 5, lines 4-21) FIG. 15 shows an arrangement for calculating a correction values. The arrangement comprises a photographing camera 43 equivalent to that shown in FIG. 12, a sheet 47 for aberration detection which is placed on a stand bottom plate 46, a memory card 23 for recording image information on the sheet 47 for photographed aberration detection, a card reader 25 for reading out image information on the memory card 23, a data expanding section 30 for data-expanding the image information, an RGB

converting section 31 for converting the information to RGB signals, an aberration correction value calculation section 48 for calculation correction values,  $a_1$ ,  $a_2$  corresponding to the focal length of header information and distortion aberration from lens position information, for aberration correction, and a distortion aberration correction table 27 for recording calculated correction values,  $a_1$ ,  $a_2$ . In the image processing apparatus, the aberration detection sheet 47 is imaged by the photographing camera 43 and corresponding image information is stored in the memory card 23. The image information in the memory card 23 is read out of the card reader 25. After being data-expanded by the data-expanding section 30, the image information is converted to RGB signals by means of the RGB converting section 31. Then the signals are supplied to the aberration correction value calculating section 48 where correction values,  $a_1$ ,  $a_2$ , are calculated. These correction values are written in the distortion aberration table 27 at those predetermined addresses determined by the focal length and lens position. It is possible to perform compose processing with the use of the distortion aberration table 27 above. According to the present embodiment, images are taken with a cross mark in FIG. 16 displayed at a finder and centered at the nine solid dots and, by so doing, it is possible to enhance the accuracy with which the aberration is calculated. As the sheet 47 for aberration detection use may be made of not only the aberration detection sheet 47 as shown in FIG. 14A but also a grid-like pattern sheet such as graph paper. (col. 12, lines 5-49)

Thus, *Komiya et al.* merely discloses an aberration detection sheet 47 having nine dots. Nothing in *Komiya et al.* shows, teaches or suggests a setting unit which sets chromatic aberration factors based upon a predetermined pattern corresponding

to pixel pitch of the sensor as claimed in claim 6, or as claimed in claim 11. Rather, *Komiya* merely discloses an aberration detection sheet 47.

Since nothing in *Komiya et al.* shows, teaches or suggests a setting unit which sets chromatic aberration factors based on a predetermined pattern corresponding to pixel pitch of the sensor as claimed in claims 6 and 11, Applicants respectfully request the Examiner withdraws the rejection to claims 6 and 11 under 35 U.S.C. §102(e).

Claims 7-8, 10, 12-13 and 15-16 depend from claims 6 and 11 and recite additional features. Applicants respectfully submit that claims 7-8, 10, 12-13 and 15-16 would not have been anticipated by *Komiya et al* within the meaning of 35 U.S.C. §102(e) at least for the reasons as set forth above. Therefore, applicants respectfully request the Examiner withdraws the rejection to claims 7-8, 10, 12-13 and 15-16 under 35 U.S.C. §102(e).

Claims 9, 14, 17 and 20-23 were rejected under 35 U.S.C. §103 as being unpatentable over *Komiya et al* in view of *Hyodo* (U.S. Patent No. 6,219,463).

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C § 103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, *Komiya et al* merely discloses an aberration detection sheet 47 having nine dots. Nothing in *Komiya et al* shows, teaches or suggests a determining unit which determines a character amount of image data picked up from a pattern image with a predetermined pattern as claimed in claim 17. Rather, *Komiya et al* merely discloses an aberration detection sheet 47.

*Hyodo* appears to disclose an image reading device including a reading optical system which is able to read an image with a variable magnification. (col. 1, lines 9-11) In this stage, a ladder pattern 3b of the reference pattern 3 shown in FIG. 9 is read, MTF (Modulation Transfer Function) is calculated from the result of reading this ladder pattern 3b and it is checked whether or not irregular defocusing of the lens system is occurring. (col. 11, lines 5-9) By the operations of step S1 through step S3, image deteriorating factors due to the MTF characteristic of the lens and the magnification ratio chromatic aberration can be brought into advantageous conditions within a range which can be set. (col. 11, lines 31-35)

Thus, *Hyodo* merely discloses calculating a MTF from the result of reading the ladder pattern 3b to determine image deterioration factors due to characteristics of the lens (col. 11, lines 6-9 and 31-35). Nothing in *Hyodo* shows, teaches or suggests a determining unit which determines a character amount of an image data as claimed in claim 17. Rather, *Hyodo* teaches away from the claimed invention and calculates a MTF which represents a characteristic of a lens and not a character amount of image data.

Since neither *Komiya et al* or *Hyodo* show, teach or suggest a determining unit which determines a character amount of image data as claimed in claim 17, Applicants respectfully request the Examiner withdraws the rejection to claim 17 under 35 U.S.C § 103.

Claims 9, 14 and 20-23 depend from claims 6, 11 and 17 and recite additional features. Applicants respectfully submit that claims 9, 14 and 20-23 would not have been obvious within the meaning of 35 U.S.C. §103 over *Komiya et al* and *Hyodo* at least for the reasons as set forth above. Therefore, applicants respectfully request

the Examiner withdraws the rejection to claims 9, 14 and 20-23 under 35 U.S.C. §103.

Claims 24-29 were rejected under 35 U.S.C. §103 as being unpatentable over *Komiya et al.* in view of *Hyodo* and *Kobayashi* (U.S. Patent No. 5,414,536).

Applicants respectfully traverse the Examiner's rejection of the claims under 35 U.S.C. §103. The claims have been reviewed in light of the Office Action, and for reasons which will be set forth below, Applicants respectfully request the Examiner withdraws the rejection to the claims and allows the claims to issue.

As discussed above, since nothing in *Komiya et al.* nor *Hyodo* show, teach or suggest the primary features as claimed in claims 6, 11 and 17, Applicants respectfully submit that the combination of the secondary reference to *Kobayashi et al.* will not overcome the deficiencies of the primary references. Therefore, Applicants respectfully request the Examiner withdraws the rejection to claims 24-29 under 35 U.S.C. §103.

Since objected to claims 18 and 19 depend from allowable claims, applicants respectfully request the Examiner withdraws the objection thereto.

Thus it now appears that the application is in condition for reconsideration and allowance. Reconsideration and allowance at an early date are respectfully requested. Should the Examiner find that the application is not now in condition for allowance, Applicants respectfully request the Examiner enters this Amendment for purposes of appeal.

If for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is respectfully requested to contact, by telephone, the

applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event that this paper is not timely filed within the currently set shortened statutory period, applicants respectfully petition for an appropriate extension of time. The fees for such extension of time may be charged to our Deposit Account No. 02-4800.

In the event that any additional fees are due with this paper, please charge our Deposit Account No. 02-4800.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

Date: April 11, 2005

By: 

Ellen Marcie Emas  
Registration No. 32,131

P.O. Box 1404  
Alexandria, Virginia 22313-1404  
(703) 836-6620